UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/690,973	ABRAHAM ET AL.
		Examiner	Art Unit	
		KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 September 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-4,8,9,13,14,18-23,25 and 35</u> is/are rejected.

7)☒ Claim(s) <u>5-7,10-12,15-17,24 and 26-34</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>4/13/07</u>

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 4/13/2007 has been considered in part because the references of U.S. Pat. 4,894,842, 5,592,008 and 5,798,732 had been already cited by the Examiner (see PTO-Form 892) sent on 3/27/2007.

Response to Arguments

2. Applicant's arguments filed 9/27/2007 have been fully considered but they are not persuasive.

Applicant argues that the claim "processor" does not read on "the digital signal processor 50"; and Van Nee, "51_1 to 51_N in Figure 9 does not teach "providing the at least one satellite signal parameter to the processor".

In response to the applicant's argument that Van Nee discloses that the digital signal processor has a control output 55 for controlling driving a local reference signal generator 60, which has an output 63 for providing the local reference signal 6 (FIG. 1). The local reference signal generator 60 has a reference input 61 coupled to a memory 62, in which information relating to the characteristic code of the navigation signal 5 is stored (see col. 14, lines 1-41); and providing the at least one signal parameter (51_1 to 51_N) to the processor 50).

Applicant argues that as Examiner has indicated, "Van Nee does not specifically teach generating correlation results in response to a command from a processor". Therefore, in Van Nee, "47_1 to 47_N in Figure 9 and col. 14 lines 48-59) are not response

to a command from a processor". Therefore, Assignee respectfully disagrees with

Examiner's basis for combining Van Nee and Broekhoven.

In response to the Applicant's argument that there is no suggestion to combine

the references, the Examiner recognizes that references cannot be arbitrarily combined

and that there must be some reason why one skilled in the art would be motivated to

make the proposed combination of primary and secondary references. In re Nomiya,

184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to

make the motivation the modification be expressly articulated. The test for combining

references is what the combination of disclosures taken as whole would suggest to one

of ordinary skill in the art. In McLaughlin, 170 USPQ 209 (CCPA 1971). References

are evaluated by what they suggest to one versed in the art. Rather than by their

specific disclosures. In re Bozek, 163 USPQ 545 (CCPA) 1969.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 3, 4, 8, 9, 13, 14, 18, 19, 21-23, 25, and 35 are rejected under 35

U.S.C. 103(a) as being unpatentable over Van Nee (US 5,692,008) in view of

Broekhoven et al. (US 4,894,842).

Regarding claim 1, Van Nee teaches a method, comprising: generating a plurality of correlation results between a satellite signal and a reference signal (471 to 47N in Figure 9 and column 14 lines 48-59, wherein, the correlation functions are interpreted as the correlation results); estimating at least one satellite signal parameter from the plurality of correlation results using a co-processor integrated within the satellite positioning system receiver (column 3 lines 51-62 and column 4 lines 31-40, wherein, the received signal time delay T_o, i.e., pulse width resulting from the time difference between received and reference pulses, is interpreted as the signal parameter. Also, column 13 lines 13-15, lines 56-.61 and 50 in Figure 9, wherein, it is clearly interpreted that the DSP 50 in Figure 9 is integrated within the satellite positioning system receiver 30); and providing the at least one satellite signal parameter to the processor (511 ... 51N in Figure 9). Van Nee does not specifically teach generating correlation results in response to a command from a processor. However, Broekhoven et al. disclose a processor providing instructions to a correlator (column 4 lines, wherein, the 'microprogram controller' is interpreted as the processor). It is essential that a correlator receive instructions from a processor. Without the necessary instructions, the correlator will not commence generating correlation results. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the method of Van Nee include a processor for providing commands to a plurality of correlators, as Broekhoven et al. teach, in order to be able to generate correlation results.

Regarding claim 3, Van Nee teaches the method of claim 1, wherein the plurality of correlation results comprises a correlation history defined by at least one sequence of

correlation results corresponding to a respective at least one relative time delay between the satellite signal and the reference signal (column 3 lines 51-62, column 4 lines 31-40, wherein, the 'delay time' is interpreted as the relative time delay between the satellite signal and the reference signal).

Regarding claim 4, Broekhoven et al. discloses, wherein the at least one satellite signal parameter comprises a Doppler offset for the satellite signal relative to the satellite positioning system receiver (column 2 lines 55-58, wherein, the 'Doppler contribution' is interpreted as the Doppler offset).

Regarding claim 8, Broekhoven et al. teaches, estimating a frequency of an oscillator in the satellite positioning system receiver in response to the Doppler offset (column 7 lines 15-17, wherein, the 'local oscillator' is interpreted as the oscillator in the satellite positioning system receiver).

Regarding claim 9, Van Nee teaches the method of claim 3,. wherein the at least one satellite signal parameter comprises navigation data bits (column 3 lines 22-24, lines 31-36, wherein, the 'data bits' are interpreted as the navigation data bits).

Regarding claim 13, Van Nee teaches the method of claim 3, wherein the at least one satellite signal parameter comprises a navigation bit timing of the satellite signal (column 3 lines 22-24, lines 31-36, wherein, the 'code bits' is interpreted as comprises the navigation bit timing of the satellite signal. See also lines 51-62 in column 3).

Regarding claim 14, Van Nee teaches the method of claim 13, wherein the estimating step comprises: determining, in response to the correlation history, a plurality of estimates of signal level using one or more receiver frequency and bit timing hypotheses (column 4, lines 16-40, wherein, the mean value M is interpreted as the signal level).

Regarding claim 18, Van Nee teaches the method of claim 13, further comprising: estimating a timing error associated with the satellite positioning system receiver using the navigation bit timing (column 3 lines 51-53, wherein, the 'delay time' is interpreted as the timing error).

Regarding claim 19, Van Nee teaches the method of claim 1, wherein the at least one satellite signal parameter comprises at least one noise statistic measurement associated with the satellite signal (column 6 lines 13-22, wherein, 'n(t)' in the navigation signal is interpreted as the at least one noise statistic measurement).

Regarding claim 21, Van Nee teaches the method of claim 1, wherein the generating step comprises storing the plurality of correlation results in a memory within the satellite positioning system receiver (column 15 lines 40-42).

Regarding claim 22, Van Nee discloses an apparatus for estimating a satellite signal parameter in a satellite positioning system receiver, comprising: a correlator for generating a plurality of correlation results between a satellite signal and a reference signal (471 to 47N in Figure 9 and column 14 lines 48-59); a co-processor, integrated within the satellite positioning system receiver, for estimating at least one satellite signal

parameter from the plurality of correlation results (column 3 lines 51-62, column 4 lines

31-40, wherein, the received signal time delay, i.e., propagation time, is interpreted as

the signal parameter. Also, column 13 lines 13-15, lines 56-61 and 50 in Figure 9,

wherein, it is clearly interpreted that the DSP 50 in Figure 9 is integrated within the

satellite positioning system receiver 30); and means for providing the at least one

satellite signal parameter to the processor (511 to 51N in Figure 9). Van Nee does not

specifically teach generating correlation results in response to a command from a

processor. However, as discussed in claim 1 above, Broekhoven et al. disclose a

processor providing instructions to a correlator (column 4 lines, wherein,

the 'microprogram controller' is interpreted as the processor).

Regarding claim 23, Van Nee discloses the apparatus of claim 22, further

comprising: a memory for storing the plurality of correlation results (column 15 lines 40-

42).

Regarding claim 25, Van Nee discloses the apparatus of claim 22, wherein the

plurality of correlation results comprises a correlation history defined by at least one

sequence of correlation results corresponding to a respective at least one relative time

delay between the satellite signal and the reference signal (column 3 lines 22-24, lines

31-36, lines 51-62)

Regarding claim 35, Van Nee discloses the apparatus of claim 22, wherein the

co-processor is adapted to compute at least one noise statistic in response to the

plurality of correlation results (column 6 lines 13-22, wherein, 'n(t)' in the navigation

signal is interpreted as the at least one noise statistic).

5.   Claims 2 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Van Nee (US 5,692,008) and Broekhoven et al. (US 4,894,842), and further in view of

Eshenbach (US 5,798,732).

Regarding claim 2, Van Nee or Broekhoven et al. do not specifically teach

estimating at least one receiver parameter using the at least one satellite signal

parameter. However, Eshenbach teaches estimating at least one receiver parameter

using the at least one satellite signal parameter (column 3 lines 26-29, wherein

'geographical location and velocity' is interpreted as receiver parameters). It is clearly

well know in the relevant art a GPS receiver is capable of estimating at least one

parameter, such as its location, using a satellite signal. Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to have the

method of Van Nee and Broekhoven et al. include estimating at least one receiver

parameter using the at least one satellite signal parameter, as Eshenbach teaches.

Regarding claim 20, Eshenbach teaches using the at least one satellite signal

parameter to configure the satellite positioning receiver when performing further

correlations (column 3 lines 26-29, wherein 'geographical location and velocity' is

interpreted as receiver parameters).

Allowable Subject Matter

6.   Claims 5-7, 10-12, 15-17, 24, 26-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to clearly teach or suggest combining the correlation history complex cross-products to compute the Doppler offset. The prior art of record fails to clearly teach or suggest thresholding the correlation history complex dot-products to identify phase transitions within the correlation history.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KHAI TRAN
Primary Examiner
Art Unit 2611

KT
December 17, 2007